

**What is claimed is:**

1. A method of controlling a storage device controlling apparatus which includes:

a plurality of channel controllers having a circuit board on which are formed a file access processing section receiving requests to input and output data in files as units from an information processing apparatus via a network and an I/O processor outputting I/O requests corresponding to said requests to input and output data to a storage device; and

a disk controller executing input and output of data into and from said storage device in response to the I/O requests sent from said I/O processors, and

which manages a memory area provided by said storage device in logical volumes, which are memory areas logically set on the memory area, said method comprising the step of:

performing, by said disk controller, a replication management processing whereby data is also written into a second logical volume to store a copy of the data in the second logical volume, when said data is written into a first logical volume.

2. A method of controlling a storage device controlling apparatus according to claim 1 further comprising the steps of:

receiving, by each of at least one of said channel controllers, information specifying said to-be-copied data in files or directories as units, said information being sent from said information processing apparatus; and

identifying, by each said at least one channel controller, data of a file or directory specified by said information received and controlling such that the data is stored in said first logical volume.

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3. A method of controlling a storage device controlling apparatus according to claim 1 further comprising the steps of:

receiving, by each of at least one of said channel  
10 controllers, first information specifying said to-be-copied data in files or directories as units, said first information being sent from said information processing apparatus;

identifying, by each said at least one channel controller, data of a file or directory specified by said  
15 first information received and controlling such that the data is stored in said first logical volume;

receiving, by each said at least one channel controller, second information instructing to stop said replication management processing, said second information being sent from  
20 said information processing apparatus;

notifying, by each said at least one channel controller, said disk controller of an effect when said second information is received;

stopping by said disk controller, when receiving said  
25 notifying, said replication management process; and

starting to write into a plurality of first logical volumes after said replication management processing stops if writing into said storage device data of a file or directory

specified by said first information causes writing into the plurality of first logical volumes, when said second information is received.

5           4. A method of controlling a storage device controlling apparatus according to claim 1, wherein the channel controllers include at least one enabled to communicate with the information processing apparatus through a LAN and at least one enabled to communicate with the information  
10 processing apparatus through a Fibre Channel.

          5. A method of controlling a storage device controlling apparatus according to claim 4, wherein each of the channel controllers enabled to communicate with the information  
15 processing apparatus through a LAN is provided with its individual network address.

          6. A method of controlling a storage device controlling apparatus according to claim 4, wherein each of the channel  
20 controllers enabled to communicate with the information processing apparatus through a LAN includes a NAS manager providing a setting Web page for setting the replication managing function.

25           7. A method of controlling a storage device controlling apparatus which includes:

          a plurality of channel controllers having a circuit board on which are formed a file access processing section

receiving requests to input and output data in files as units from an information processing apparatus via a network and an I/O processor outputting I/O requests corresponding to said requests to input and output data to a storage device; and

5        a disk controller executing input and output of data into and from said storage device in response to the I/O requests sent from said I/O processors, and

         which manages a memory area provided by said storage device in logical volumes, which are memory areas logically  
10        set on the memory area, said method comprising the step of:

         performing, by said disk controller, a processing whereby data is sent to another storage device controlling apparatus to store a copy of the data also in a second logical volume provided by said another storage device controlling  
15        apparatus, when said data is written into a first logical volume.

8. A method of controlling a storage device controlling apparatus according to claim 7 further comprising the steps  
20        of:

         receiving, by each of at least one of said channel controllers, information specifying said to-be-copied data in files or directories as units, said information being sent from said information processing apparatus; and

25        identifying, by each said at least one channel controller, data of a file or directory specified by said first information received and controlling such that the data is stored in said first logical volume.

9. A method of controlling a storage device controlling apparatus according to claim 7, wherein the channel controllers include at least one enabled to communicate with the information processing apparatus through a LAN and at least one enabled to communicate with the information processing apparatus through a Fibre Channel.

10. A method of controlling a storage device controlling apparatus according to claim 9, wherein each of the channel controllers enabled to communicate with the information processing apparatus through a LAN is provided with its individual network address.

11. A storage device controlling apparatus which includes:

a plurality of channel controllers having a circuit board on which are formed a file access processing section receiving requests to input and output data in files as units from an information processing apparatus via a network and an I/O processor outputting I/O requests corresponding to said requests to input and output data to a storage device; and

a disk controller executing input and output of data into and from said storage device in response to the I/O requests sent from said I/O processors, and

which manages a memory area provided by said storage device in logical volumes, which are memory areas logically set on the memory area,

said controlling apparatus wherein said disk controller comprises a section which performs a replication management processing whereby data is also written into a second logical volume to store a copy of the data in the second logical volume, when said data is written into a first logical volume.

12. A storage device controlling apparatus according to claim 11, wherein each of at least one of said channel controllers comprises a section which receives information specifying said to-be-copied data in files or directories as units, said information being sent from said information processing apparatus; and

wherein each said at least one channel controller further comprises a section which receives said information, identifies data of a file or directory specified by said information, and controls such that the data is stored in said first logical volume.

13. A storage device controlling apparatus according to claim 11, wherein each of at least one of said channel controllers comprises a section which receives first information specifying said to-be-copied data in files or directories as units, said first information being sent from said information processing apparatus; a section which identifies data of a file or directory specified by said first information received and controls such that the data is stored in said first logical volume; a section which receives second information instructing to stop said replication management

processing, said second information being sent from said information processing apparatus; and a section which notifies said disk controller of an effect when said second information is received;

5            wherein said disk controller further comprises a section which stops said replication management processing when said notice is received; and

             wherein each said at least one channel controller further comprises a section which starts to write into a  
10    plurality of first logical volumes after said replication management processing stops if writing into said storage device data of a file or directory specified by said first information causes writing into the plurality of first logical volumes, when said second information is received.

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             14. A storage device controlling apparatus according to claim 11, wherein the channel controllers include at least one enabled to communicate with the information processing apparatus through a LAN and at least one enabled to  
20    communicate with the information processing apparatus through a Fibre Channel.

             15. A method of controlling a storage device controlling apparatus according to claim 14, wherein each of the channel  
25    controllers enabled to communicate with the information processing apparatus through a LAN is provided with its individual network address.

16. A storage device controlling apparatus according to claim 14, wherein each of the channel controllers enabled to communicate with the information processing apparatus through a LAN includes a NAS manager providing a setting Web page for  
5 setting the replication managing function.

17. A storage device controlling apparatus which includes:

a plurality of channel controllers having a circuit  
10 board on which are formed a file access processing section receiving requests to input and output data in files as units from an information processing apparatus via a network and an I/O processor outputting I/O requests corresponding to said requests to input and output data to a storage device; and

15 a disk controller executing input and output of data into and from said storage device in response to the I/O requests sent from said I/O processors, and

which manages a memory area provided by said storage device in logical volumes, which are memory areas logically  
20 set on the memory area,

said controlling apparatus wherein said disk controller comprises a section which performs a processing whereby data is sent to another storage device controlling apparatus to store a copy of the data also in a second logical volume  
25 provided by said another storage device controlling apparatus, when said data is written into a first logical volume.

18. A storage device controlling apparatus according to



claim 17 wherein each of at least one of said channel controllers comprises a section which receives information specifying said to-be-copied data in files or directories as units, said information being sent from said information processing apparatus; and a section which identifies data of a file or directory specified by said information received and controls such that the data is stored in said first logical volume.

10           19. A storage device controlling apparatus according to claim 17, wherein the channel controllers include at least one enabled to communicate with the information processing apparatus through a LAN and at least one enabled to communicate with the information processing apparatus through  
15 a Fibre Channel.

          20. A method of controlling a storage device controlling apparatus according to claim 19, wherein each of the channel controllers enabled to communicate with the information  
20 processing apparatus through a LAN is provided with its individual network address.